

QUARTERLY REPORT FORM

Report Date: May 11, 2005	U. S. DOE Project Director's Progress Report	Office of Science
Project Number: n/a	Title: U.S. LHC Construction Project	Program: High Energy Physics
Report Period: 2nd Quarter FY2005	Project: U.S. CMS	Project Office: Fermi Site Office

SUMMARY ASSESSMENT

	<u>Current Quarter</u>	<u>Previous Quarter</u>
Cost:	Satisfactory	Satisfactory
Schedule:	Satisfactory	Satisfactory
Technical:	Satisfactory	Satisfactory
Overall:	Satisfactory	Satisfactory

PROJECT MANAGEMENT

DOE Program Manager:	Tom Ferbel	Phone: (301) 903-4115
DOE Federal Project Director:	Pepin Carolan	Phone: (630) 840-2227
Contractor Project Manager:	Dan Green	Phone: (630) 840-3104

COST/FUNDING (\$K)

	<u>Baseline</u>	<u>Current Estimate</u>	<u>Funding Received</u>
DOE TPC:	147,050	147,050	141,554
NON DOE ¹ :	20,200	20,200	20,200
Total:	167,250	167,250	161,754

CRITICAL DECISIONS

<u>Number</u>	<u>Title</u>	<u>Baseline</u>	<u>Actual/Forecast</u>
CD-1	Approve Mission Need	12/97	12/97(A)
CD-2	Approve Baselines	12/98	12/98(A)
CD-3	Start Construction	12/97	12/97(A)
CD-4A	Project 97% Complete	09/05	09/05(F)
CD-4B ²	Project 100% Complete	09/08	09/08(F)

FUNDING PROFILE/COSTS

Per FY 2004 budget (\$M)

	<u>Prior</u>	<u>FY05</u>	<u>FY06</u>	<u>FY07</u>	<u>Total</u>
DOE TPC:	135.99	5.564	4.200	1.300	147.050
NON DOE:	20.2	0.000	0.000	0.000	20.200
TOTAL:	156.19	5.564	4.200	1.300	167.250

Cumulative through 3/31/05 (\$K)

Remaining Contingency:	7,292
Contingency/Remaining Costs ³ :	59%
Costs Accrued:	142,971
Open Commitments:	20,129

¹ National Science Foundation.

² US LHC Level 1 Baseline Change Proposal (USLHC BCP-001), established a two-phased CD-4 milestone. CD-4A = 97% complete. CD-4B remaining 3% of US commitments complete which are dependent upon the startup of the LHC. Funding profile is extended through FY07. No change in US LHC TPC.

³ Percentage Calculation: Remaining contingency divided by Remaining Work (Remaining Work = Estimate at Completion – Budgeted Cost of Work Performed).

QUARTERLY REPORT FORM

SCHEDULE SUMMARY

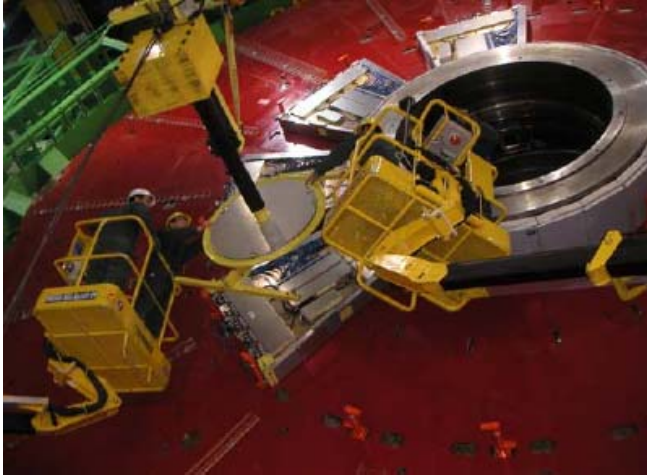
<u>Key US CMS Milestones Accomplished</u>	<u>Baseline Date</u>	<u>Actual Date</u>
• ME-1025 – MUON ME+1/2 and ME+1/3 ready for installation	30-Mar-05	30-Mar-05
<u>Key US CMS Milestones Upcoming</u>	<u>Baseline Date</u>	<u>Forecast Date</u>
• HB-032 – HCAL Front-end electronics installation in readout boxes	30-Apr-05	30-Apr-05

NARRATIVE HIGHLIGHTS

As of March 31, 2005 the overall U.S. CMS construction project was 92% complete vs. the scheduled 94% complete. The project is performing well with respect to technical, cost and schedule. The endgame plan to complete the project in coordination with international CMS has been developed and appears reasonable. U.S. CMS is mitigating remaining project risk in Forward Pixels and Silicon Tracker by augmenting Pixel resources, further optimizing tracker production capability and working with CERN to increase parts flow. U.S. CMS had adopted the new CMS v34 schedule for those milestones not yet accomplished, and milestone dates are updated to CMS v34 schedule status.

- **Endcap Muon (EMU):** Production of Cathode Strip Chambers (CSCs) at Fermilab is complete, and the Final Assembly and System Testing (FAST) sites have ended operations. Installation of the CSCs onto the CMS Endcap Yoke (YE) is proceeding well within the scheduled time. Production of off chamber electronics is well underway and is expected to finish by the end of CY05 following on a successful 25 nsec test beam run in 2004.
- **Hadron Calorimeter (HCAL):** Front-end ASIC production is complete, and installation of the front-end electronics has begun. Preparations for the vertical slice tests in SX5 are proceeding following completion of the test beam run in October 2004.
- **Trigger and Data Acquisition System (TriDAS):** Trigger production is underway, and prototype modules will be used in the SX5 slice test and serve as a portable trigger. Work on the Data Acquisition (DAQ) Technical Design Report (TDR) is complete. The U.S. groups have changed responsibility for purchases so as to advance the U.S. schedule for DAQ.
- **Electromagnetic Calorimeter (ECAL):** The U.S. contribution to ECAL has been altered to conform to the new 1/4-micron ECAL electronics, with U.S. groups now involved also in the optical data links and low voltage supplies for ECAL, as well as the APDs and lasers for calibration.
- **Forward Pixels (FPix):** The first 1/4-micron version of the readout chip (ROC) has been received and tested, and a second prototype run has been received and declared to be of production quality. Since the U.S. CMS effort depends on ROC parts flow, this success bolsters the FPix schedule. Procurement of the sensors has been started.
- **Silicon Strip Tracker (SiTrk):** Procurements of automation equipment at Fermilab and UC Santa Barbara are complete, and prototype modules, which exceed all specification, have been produced. All module components have entered production and production lines have doubled capacity; sensors will now be provided by Hamamatsu and a revised schedule has been made for SiTrk completion.
- **Common Projects(CP):** CP are very nearly complete except for delivery of the field mapper for the CMS magnet. This has slipped into FY05 in v34, so the milestone was revised to occur at the end of FY05.

QUARTERLY REPORT FORM



Left- Installation of CMS Endcap Muon chambers by U.S. CMS personnel at SX-5.

Below- CMS Underground Experiment Hall, civil construction now complete, with lowering of first detector components expected early in 2006.



Left- CMS Hadron Calorimeter HE section on which U.S. CMS is doing cabling, testing and integration work.



QUARTERLY REPORT FORM

BACKUP INFORMATION

Baseline Documents

1. LHC International Agreement and the Accelerator and Experiments Protocols – approved Dec97 by DOE Secretary and NSF Director.
2. DOE/NSF Memorandum of Understanding on LHC – approved Jun98, revised Dec99, by M. Krebs (DOE), and R. Eisenstein (NSF).
3. U.S. LHC Project Execution Plan – rev1 approved Oct02, rev0 approved Dec98, by J. O’Fallon (DOE), and J. Lightbody (NSF).
4. U.S. CMS Project Management Plan – approved Nov98, revised Dec02, revised Feb03 by J. O’Fallon (DOE), and J. Lightbody (NSF).

Alternate Cost Status Report (earned value) as of March 31, 2005 (\$K)

WBS Item	Contractor ⁴	Task Description	Cumulative to Date			At Completion		
			BCWS	BCWP	ACWP	Budget	Contractor Estimate	Proj Manager Estimate
1.1		Endcap Muon	40,385	39,932	39,660	41,109	41,302	41,302
1.2		Hadron Calorimeter	44,105	42,959	41,540	44,442	44,306	44,306
1.3		Trigger & Data Acquisition	11,340	10,964	10,838	14,970	15,080	15,080
1.4		Electromagnetic Calorimeter	13,372	12,566	11,709	13,561	13,535	13,535
1.5		Forward Pixels	6,830	6,002	5,536	8,633	9,018	9,018
1.6		Common Projects	23,333	23,339	23,321	23,349	23,309	23,309
1.7		Project Office	6,962	7,471	6,804	7,166	7,079	7,079
1.8		Silicon Tracker	4,623	4,354	3,562	6,263	6,327	6,327
		Contingency				7,756	7,292	7,292
		U.S. Total Project Cost	150,951	147,588	142,971	167,250	167,250	167,250

Change Control Activity (1/05 – 3/05)

<u>Baseline Control Level</u>	<u>Change Control Authority</u>	<u># of Changes</u>
Level 0	DOE –Dir Office of Science/NSF-Assoc Dir for Mathematical and Physical Sciences	Zero
Level 1	DOE/NSF Joint Oversight Group	Zero
Level 2	DOE/NSF Project Office	Four
Level 3	U.S. CMS Project Office	Three

Of the change requests approved for this quarter, 7 affected budget, 0 affected schedule, and 0 affected scope.

⁴ Fermilab is the Host Laboratory for the U.S. CMS Project. In addition to Fermilab, 38 universities participate in the U.S. CMS Project.

QUARTERLY REPORT FORM

Report Date May 1, 2005
Project Number: n/a
Report Period 2nd Quarter

U. S. DOE Project Director's Progress Report
Title: U.S. LHC Construction Project
Project: U.S. ATLAS

Office of Science
Program: High Energy Physics
Project Office: Fermi Site Office

SUMMARY ASSESSMENT

	<u>Current Quarter</u>	<u>Previous Quarter</u>
Cost:	Satisfactory	Satisfactory
Schedule:	Satisfactory	Satisfactory
Technical:	Satisfactory	Satisfactory
Overall:	Satisfactory	Satisfactory

PROJECT MANAGEMENT

DOE Program Manager:	Tom Ferbel	Phone: (301) 903-4115
DOE Federal Project Director:	Pepin Carolan	Phone: (630) 840-2227
Contractor Project Manager:	Bill Willis	Phone: (914)-591-2809

FUNDING (\$K)

	<u>Baseline</u>	<u>Current Est.</u>	<u>Funding</u>
DOE TPC	102,950	102,950	97,831
NON DOE ⁵	60,800	60,800	60,800
Total	163,750	163,750	158,631

CRITICAL DECISIONS

<u>Number</u>	<u>Title</u>	<u>Baseline</u>	<u>Actual/Forecast</u>
CD-1	Approve Mission Need	12/97	12/97 (A)
CD-2	Approve Baselines	03/98	03/98 (A)
CD-3	Start Construction	12/97	12/97 (A)
CD-4A	97% Construction Complete	09/05	09/05 (F)
CD-4B ⁶	100% Construction Complete	09/08	09/08 (F)

FUNDING PROFILE/COSTS

Per FY 2005 budget (\$M)

	<u>Prior</u>	<u>FY 05</u>	<u>FY06</u>	<u>FY07</u>	<u>FY08</u>	<u>Total</u>
DOE TPC	92.34	5.49	3.24	1.88	0.0	102.95
NSF	60.80	0.00	0.00	0.00	0.0	60.80
Total	153.14	5.49	3.24	1.88	0.0	163.75

Cumulative through 3/31/05 (\$K)

Remaining Contingency	10,848
Contingency/Remaining Costs ⁷	92%
Costs Accrued	141,068
Open Commitments	3,042

⁵ National Science Foundation (NSF)

⁶ US LHC Level 1 Baseline Change Proposal (USLHC BCP-001), established a two-phased CD-4 milestone. CD-4A = 97% complete. CD-4B remaining 3% of US commitments complete which are dependent upon the startup of the LHC. Funding profile is extended through FY07. No change in US LHC TPC.

⁷ Percentage calculation: Remaining Contingency divided by Remaining Costs where Remaining Costs = Budget at Completion - Actual Cost of Work Performed.

QUARTERLY REPORT FORM

SCHEDULE SUMMARY

<u>Milestones Accomplished Since Last Report</u>	<u>Baseline Date</u>	<u>Actual Date</u>
<ul style="list-style-type: none">LAr FCAL-A Delivered to EC	02/05	03/05

<u>Key Milestones Upcoming (Next Three Months)</u>	<u>Baseline Date</u>	<u>Forecast Date</u>
<ul style="list-style-type: none">Silicon ROD Testing Production/Testing Complete	06/04	04/05
<ul style="list-style-type: none">Muon Kinematic Mounts/Struts Production Complete	11/04	07/05
<ul style="list-style-type: none">TRT Barrel Construction Complete	01/05	05/05
<ul style="list-style-type: none">Muon Align System Final Delivery	03/05	09/05

NARRATIVE HIGHLIGHTS

As of March 31, 2005 the project is nearly 96% complete, per the plan, reflecting the most recent update of cost and schedule estimates (Estimate-To-Complete '04) for the remaining work to complete the baseline scope. There are no major technical issues- all U.S. ATLAS subsystems are now in production and detector components are being successfully delivered to CERN. Cost and Schedule performance is very good. Contingency planning, prioritization and allocation strategies are focused on ensuring that adequate contingency levels can be maintained through project completion. The current U.S. ATLAS schedule meets ATLAS needs. Forecast dates above have been revised to reflect the latest schedule estimates. Below are a few highlights of the U.S. ATLAS construction project:

- Silicon:** Pixel module production is going smoothly. Modules have been loaded on 20 sectors, proceeding well with 100% yield. All Silicon Strip (SS) construction is now 100% complete. 178 RODs are completed and tested, enough for the entire SS and two (of three) pixel layers.
- TRT:** The final module was installed this quarter, along with the outer shell. Production for the TRT electronics continues. All (active readout) AR1 and AR2 boards have been installed on the detector.
- Liquid Argon:** The refrigeration system has been completed, fully tested and accepted. The production of the Front End boards is progressing. All HV feedthroughs and filter crates have been installed.
- Tile:** The ATLAS calorimeter calibration workshop was held. Production of the WLS fiber assemblies for the Gap scintillator modules has been completed.
- Muon:** 235 of 240 US chambers have been integrated and 182 were cosmic tested and ready for integration. A strong effort is being made to ensure success of integration and production cosmic testing of the CSC chambers. Strut machining continued steadily. Good progress continues on the fabrication of the CSMs. Work continues on the alignment devices.
- TriggerDAQ:** First articles of Region of Interest Builder have been produced. Full production is planned for the next quarter. Work continued on the Data Acquisition Software system.

QUARTERLY REPORT FORM



Left- ATLAS Barrel Transition Radiation Tracker with all modules installed in Building 180 at CERN.

Below- ATLAS End Cap Muon Chambers being readied for installation at CERN.



Left- BNL technicians installing ATLAS Electromagnetic Calorimeter (ECAL) Liquid Argon System Crates on the Barrel Cryostat at CERN in the ATLAS Cavern.



Below- ATLAS ECAL Cryo System Liquid Nitrogen Refrigerator installed at CERN.



QUARTERLY REPORT FORM

BACKUP INFORMATION

Baseline Documents

1. U.S. - CERN Agreement and the Accelerator and Experiments Protocols - approved 12/97 by DOE Secretary and NSF Director.
2. DOE/NSF Memorandum of Understanding on LHC, approved 6/98, revised 12/99, by M. Krebs, DOE, and R. Eisenstein, NSF.
3. U.S. LHC Project Execution Plan - approved 12/98 by J. O'Fallon, DOE, and J. Lightbody, NSF.
4. U.S. ATLAS Project Management Plan - approved 3/98, revised 12/99, by J. O'Fallon, DOE, and J. Lightbody, NSF.

Alternate Cost Status Report (earned value) as of March 31, 2005 (\$K)

WBS Item	Contractor ⁸	Task Description	Cumulative to Date			At Completion		
			BCWS	BCWP	ACWP	Budget	Contractor Estimate	Project Mgr. Estimate
1.1		Silicon System	23,070	22,905	22,512	22,554	22,554	22,554
1.2		Transition Radiation Tracker	11,736	11,728	10,795	11,737	11,737	11,737
1.3		Liquid Argon Calorimeter	46,081	46,042	41,602	47,059	47,059	47,059
1.4		Tile Calorimeter	11,376	11,376	11,172	11,221	11,221	11,221
1.5		Muon Spectrometer	29,368	28,851	28,572	28,572	28,572	28,572
1.6		Trigger/Data Acquisition System	4,014	4,014	4,014	8,207	8,207	8,207
1.7		Common Projects	10,947	10,947	10,947	11,979	11,979	11,979
1.8		Education	178	178	178	286	286	286
1.9		Project Management	8,218	8,218	8,218	8,279	8,279	8,279
1.10		Technical Coordination	3,058	3,058	3,058	3,008	3,008	3,008
		Contingency				10,848	10,848	10,848
		Items Outside the Baseline						
		U.S. ATLAS Total	148,046	147,316	141,068	163,750	163,750	163,750

⁸ Brookhaven National Laboratory is the host lab for the U.S. ATLAS Project; there are 30 universities and 3 national laboratories participating in the project.

QUARTERLY REPORT FORM

Change Control Activity (01/05 – 3/05)

<u>Baseline Control Level</u>	<u>Change Control Authority</u>	<u># of Changes</u>
Level 0	DOE – Director, Office of Science/NSF –Associate Director for Mathematical and Physical Sciences	None
Level 1	DOE/NSF Joint Oversight Group	None
Level 2	DOE/NSF Project Office	None
Level 3	BNL Associate Director for High Energy and Nuclear Physics/U.S. ATLAS Project Office	None

There were no BCPs approved this quarter.

QUARTERLY REPORT FORM

Report Date: 27 April 2005	U. S. DOE Project Director's Progress Report	Office of Science
Project Number: n/a	Title: U.S. LHC Accelerator Construction Project	Program: High Energy Physics
Report Period: 2 nd Quarter FY2005	Location: Fermilab (Host Lab)	Project Office: Fermi Site Office

SUMMARY ASSESSMENT

	<u>Current Quarter</u>	<u>Previous Quarter</u>
Cost:	Minor Concern	Minor Concern
Schedule:	Minor Concern	Minor Concern
Technical:	Satisfactory	Satisfactory
Overall:	Satisfactory	Satisfactory

PROJECT MANAGEMENT

DOE Program Managers:	Tom Ferbel	Phone: 301-903-4115
	Bruce Strauss	Phone: 301-903-3705
DOE Project Manager:	Pepin Carolan	Phone: 630-840-2227
Contractor Manager:	Jim Kerby	Phone: 630-840-3595

FUNDING (\$K)

	<u>Baseline</u>	<u>Current Est.</u>	<u>Funding</u>
DOE TPC	110,000	110,000	108,789
NON DOE	0	0	0
Total	110,000	110,000	108,789

CRITICAL DECISIONS

<u>Number</u>	<u>Title</u>	<u>Baseline</u>	<u>Actual/Forecast</u>
CD-1	Approve Mission Need	12/97	12/97 (A)
CD-2	Approve Baselines	10/98	10/98 (A)
CD-3	Start Construction	12/97	12/97 (A)
CD-4	Construction Complete	09/05	09/05 (F)

FUNDING PROFILE/COSTS

Per FY 2005 Budget (\$M)

	<u>Prior</u>	<u>FY 05</u>	<u>Total</u>
DOE TPC	107.08	2.92	110.00
CERN	71.47	18.53	90.00
Direct ¹¹			
Total	179.34	21.45	200.00

Cumulative through 03/31/05 (\$K)

Remaining Contingency ⁹	430
Contingency/Remaining Costs ¹⁰	21%
Costs Accrued	108,557
Open Commitments	0

⁹ Based on an interim ETC incorporating change requests in process. The EAC is undergoing complete revision to evaluate cumulative cost /schedule impact of CERN delays.

¹⁰ Percentage calculation: Remaining Contingency divided by Remaining Costs where Remaining Costs = Budget at Completion - Budgeted Cost of Work Performed.

¹¹ U.S. contributions to the LHC machine includes the \$110 million for the U.S. LHC Accelerator Project and \$90 million for CERN purchases from U.S. industrial suppliers.

QUARTERLY REPORT FORM

SCHEDULE SUMMARY

<u>Milestones Accomplished Since Last Report</u>	<u>Baseline Date</u>	<u>Actual Date</u>
• First DFBX feedbox shipped to CERN	June 04	January 05
• First Q3 quadrupole shipped to CERN	August 04	January 05
• Superconducting cable sample testing completed	April 05	February 05

<u>Key Milestones Upcoming (Next Three Months)</u>	<u>Baseline Date</u>	<u>Forecast Date</u>
• First D3 dipole shipped to CERN	October 04	April 05

NARRATIVE HIGHLIGHTS

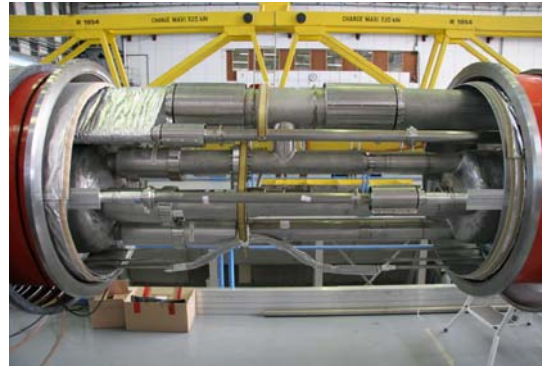
As of March 31, 2005, Project Management is processing a Baseline Change Proposal (BCP) to incorporate a revised estimate at completion (EAC) to accomplish the magnet repairs, rebuilds and re-testing needed. The schedule for completion is also revised to recover from the cumulative impact of earlier CERN delays that have impacted the project, and to restore needed float to the U.S. schedule. A reallocation from the CERN Direct funds to the production/testing fabrication effort has been requested as a part of this BCP to support the revised EAC. The contingency reported reflects what is actually available, but prior to incorporating all cost increases associated with the revised Estimate to Complete. It is anticipated that this contingency and a portion of the additional re-allocated CERN Direct funds (once approved by the BCP) will be used to implement the estimate to complete for the remaining project work scope. With the BCP approved, up to an additional ~\$1M will then be available as contingency to address remaining project technical, cost and schedule risk remaining. The project is working with DOE to develop and approve the baseline change proposal to implement the changes needed.

- [Fermilab] Four of nine Q1 quadrupoles (contain KEK cold masses) and four of nine Q2 quadrupoles have been shipped to CERN. The first Q3 quadrupole (contains a KEK cold mass) was assembled, successfully cold tested, and shipped to CERN. A completed Q2 is under test. The second Q3 quadrupole has been assembled and it being prepared for shipment. The first phase of a two-phase warm fit-up of the inner triplet was conducted at CERN.
- [BNL] All of the D1 dipoles are at CERN. Eight of nine D2 dipoles are at CERN. The last D2 has been reworked and is accepted by CERN for shipment. All three D3 dipoles are assembled. The first D3 has been successfully tested and will be shipped to CERN early next quarter. The second has been tested and the third is being prepared for the test stand. One of three D4 dipoles is at CERN. Of the remaining two, one is ready to ship and the other will be tested after the D3. Superconducting cable testing was terminated by the end of the quarter as planned.
- [LBNL] The first two of eight cryogenic feedboxes were completed and shipped to CERN in time for the trial fit-up of the first inner triplet. The third feedbox is complete, the fourth nearly so and both will be shipped to CERN early next quarter. Assembly of the fifth and sixth feedboxes has begun. Assembly continues to move along rapidly due to experience gained on the earlier units.

QUARTERLY REPORT FORM



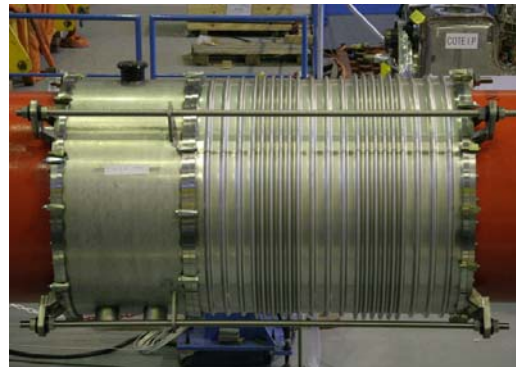
Left – Overhead view of warm fit-up activities at CERN. Q1 quadrupole (orange) is in foreground. Q2 and Q3 (also orange) are in line with Q1 and further back. Another Q2 is to right of string and two DFBX feedboxes are in foreground to right.



Above – Interconnect between Q1 and Q2 with cryogenic pipes connected.



Above – DFBXD feedbox awaiting inspection at CERN.



Above – Interconnect between Q1 and Q2 closed and ready for vacuum pump down test.



Above – Interconnect between Q2 and Q3 with cryogenic pipes connected.

QUARTERLY REPORT FORM

BACKUP INFORMATION

Baseline Documents

1. U.S. - CERN Agreement and the Accelerator and Experiments Protocols - approved 12/97 by the DOE Secretary and NSF Director.
2. DOE/NSF Memorandum of Understanding on LHC, approved 6/98, revised 12/99, by M. Krebs, DOE, and R. Eisenstein, NSF.
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4. U.S. LHC Accelerator Project Management Plan - approved 10/98, by J. O'Fallon, DOE, and J. Lightbody, NSF.

Alternate Cost Status Report (earned value) as of March 31, 2005 (\$K)

WBS Item	Contractor 13	Task Description	Cumulative to Date				At Completion ¹²	
			BCWS	BCWP	ACWP	Budget ¹⁴	Contractor Estimate ¹⁵	Project Mgr. Estimate
1.1		Interaction Region Components	63,828	63,240	63,657	64,658	66,221	64,658
1.2		RF Straight Section	15,854	15,718	15,049	15,757	15,912	15,757
1.3		Superconducting Wire and Cable	11,846	11,686	11,156	11,850	11,850	11,850
1.4		Accelerator Physics	3,359	3,359	3,288	3,359	3,359	3,359
1.5		Project Management	13,105	13,103	15,406	13,165	13,165	13,165
		Contingency				1,211	-507	1,211
		U.S. LHC Accelerator Total	107,991	107,105	108,557	110,000	110,000	110,000

Change Control Activity (01/01/05 – 3/31/05)

<u>Baseline Control Level</u>	<u>Change Control Authority</u>	<u># of Changes</u>
Level 0	DOE - Director, Office of Science	None
Level 1	DOE/NSF Joint Oversight Group	None
Level 2	DOE/NSF Project Office	Five*

* Change requests in process to address increased parts costs, fabrication and tooling for replacement quads, cold testing of spare dipoles and vendor contract modifications needed to hold schedule.

¹² At completion estimates for the WBS Level 2 elements include G&A and overhead charges for the three laboratories. These costs are tracked separately.

¹³ The U.S. LHC Accelerator Project includes Fermilab, Brookhaven National Laboratory, and Lawrence Berkeley National Laboratory. Fermilab is the lead laboratory.

¹⁴ A number of project change requests are in process and have not been fully implemented in the budget; these changes reduce contingency in the budget from \$1,211K to \$430K, and further contingency utilization is anticipated to overcome technical challenges.

¹⁵ The Contractor Estimate revision is in progress to address the cumulative cost/schedule impacts of CERN delays across the project; it is now estimated that remaining contingency will not be sufficient to cover anticipated cost and contingency needs; a Baseline Change Proposal is in being prepared to address this situation.